

**Lessons Learned: Sacramento and San Joaquin River Basins
Comprehensive Study, California**

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The US Army Corps of Engineers, Sacramento District, recently completed a major basin-wide planning study of the Sacramento and San Joaquin River basins. This 5-year effort required development and testing of basin-wide hydrologic and hydraulic models that were used to depict the without- and with-project conditions. Output from these models was combined with economic data via the HEC-FDA program to compute potential damages and benefits.

Given the large scale of the study, the risk-based environment in which the study was conducted, the level of detail required to produce results which at least showed a trend, and a compressed study schedule, the Comprehensive Study team was confronted with many obstacles in just trying to use the existing methodologies and software currently available. For example, the hydraulic models included about 1000 miles of channel, over 5000 cross sections, eight to ten storm centerings per basin, and were run for six to seven flood frequencies. The HEC-FDA analysis used 104 damage areas for which exterior stage versus frequency curves had to be developed for the without- and all of the with-project conditions.

Data management alone was challenging; however, the more complex issues included considerations regarding levee failure assumptions. Specifically, our biggest concern was how assumptions regarding upstream and downstream levee failures effect the exterior stage versus frequency relationship for the damage area/index point of interest. This paper documents some of the lessons learned by the Comprehensive Study team for conducting large, watershed-scale planning studies with a focus on the hydraulic, geotechnical, and economic aspects of the study.